

## CHILDREN'S COMPETENCE AND THE ECOLOGY OF COMMUNITIES: A FUNCTIONAL APPROACH TO THE EVALUATION OF PARTICIPATION

LOUISE CHAWLA<sup>1</sup> AND HARRY HEFT<sup>2</sup>

<sup>1</sup>Whitney Young College, Kentucky State University, Frankfort, Kentucky, U.S.A.

<sup>2</sup>Department of Psychology, Denison University, Granville, Ohio, U.S.A.

### Abstract

Initiatives to involve children and adolescents in assessing, planning and managing their local environments are increasing around the world. How these initiatives are to be evaluated, however, has only begun to be discussed. A particular theoretical challenge to be faced is formulating an approach that has broad cross-cultural applicability while also remaining sensitive to the considerable sociocultural differences that exist. The development of competence, that is, the capacity to exercise control over valued spheres of life, is identified as a quality that characterizes psychological well-being universally, even as its specific expression is formed variously in different contexts. Drawing on concepts from ecological psychology, we consider qualities of environments that are likely to support the development of competence and discuss how these concepts can inform efforts to evaluate children's participation in communities.

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### Children as citizens in a contested domain

Eight to 18 year olds in eight neighborhoods in Frankston, a small city in Victoria, Australia, engage in a variety of activities to provide information about child and youth concerns related to safety and freedom of movement in their city. Their recommendations are incorporated into the city's Community Safety Plan. In response to young people's desire to have continuing input into city planning decisions, a permanent Youth Safety Management Team is created as an advisory body to the City Council. These activities are part of the international Growing Up in Cities project of UNESCO. (Malone, 2000; Chawla & Malone, forthcoming)

Children in informal settlements in Harare, Zimbabwe and Johannesburg, South Africa document conditions in their environments as a basis for planning the most effective use of scarce resources to improve children's lives. Eager to continue their engagement, some of the children in Harare form a drama group to bring community issues to public attention, while the children in Johannesburg help design a new children's center—one of their priorities—in co-operation with a local architect and his design students. The organizations that support these processes include

Save the Children UNESCO and UNICEF. (Chinyenze-Daniel *et al.*, 1999; McIvor, 2001; Swart Kruger, 2001)

In the New Schools of Columbia, children participate in managing the environment of their school and community as an integral part of their education program. They interview residents and conduct walking tours and surveys in order to determine the most important issues to address. As examples of their initiatives, children at these schools have raised gardens as a source of food and income, organized recycling projects, developed a successful fish farming program, and raised tree seedlings for mountain reforestation. This national program operates to some degree in the majority of Columbia's public rural schools. (Hart, 1997)

As these examples show, there are initiatives underway around the world by governments, intergovernmental organizations, nonprofit organizations and schools to engage children and youth in assessing, planning and managing their local environments.<sup>1</sup> Many of these efforts are prompted by official recognition that children have rights, including rights to have a voice in decisions that affect their lives, and moreover, that the environment in

which they live is an important arena for shared decision-making. These principles are promoted by the Convention on the Rights of the Child, which was adopted by the United Nations in 1989 and has been ratified by all but two member nations<sup>2</sup>; and they have been integrated into the programs of action from the United Nations Conference on Environment and Development (the 'Earth Summit' in Rio de Janeiro in 1992) and the Second United Nations Conference on Human Settlements (the 'City Summit' in Istanbul in 1996) (United Nations, 1989, 1992; UNCHS, 1997). They are also written into many regional and national documents related to children, as well as innumerable Local Agenda 21 initiatives by municipal governments (ICLEI/IDRC, 1996).

When children enter the arena of planning for community development and environmental protection, they join a highly contested political realm where participation means different things to different people. As a report for the United Nations Research Institute for Social Development has noted, some political leaders expect participation to be 'systems maintaining,' while others believe that it should be 'systems transforming' (Pearse & Stiefel, 1979). Those who seek to maintain existing systems see participatory processes as occasions to disseminate information and mobilize cooperation with pre-determined policies. In political systems characterized by patron-client relationships, authorities may believe that they maintain participatory governments if they let citizens approach them to request favors (Driskell *et al.*, 2001). Those who advocate systems-transforming participation seek to transfer significant decision-making to the people whose lives will be affected, even if doing so may challenge existing structures of authority. They tend to view participation not only as a means to external ends, but also as an occasion for self-development and social development.

These different meanings of participation are similar to the distinction drawn by Orr (1992) between two visions of sustainable development. One, which he terms 'technological sustainability,' is based on a belief that sustainable relations with the environment will be engineered by experts in technology and economics, and for that reason, citizens at local levels need only to be receptive to these expert decisions. According to another view, which Orr terms 'ecological sustainability,' citizens need to be active and well-informed so that they can review expert recommendations and contribute their own initiatives to achieve the best possible quality of life for all.

This article seeks to illuminate processes of participation that may foster children's competence in exploring, evaluating and improving their everyday environment and influencing the political structures that determine its use, with the ultimate goal of promoting ecological sustainability. To this end, we define participation broadly to include both formal and informal opportunities to engage with the environment in the public realm. We agree with Hart (1997) that a foundation for children's participation in formal channels of environmental planning is the opportunity to explore the environment and to gather with others, socialize, observe and try out roles in public places. In this way children learn to know the natural and built world around them as well as the people who share its use and control. By considering both formal and informal means of participation, we are able to define a framework for competence in environmental change that includes young children as well as children of eight and older who are usually the focus of participatory programs.

In addition to defining conditions for participation that foster competence in environmental change, this article seeks to ground these conditions in a theoretical perspective that places children and the environment together in a common realm. As self-evident as this view may seem to many, there is a need to articulate such a perspective precisely because it is not the position held by the dominant epistemologies in the psychological and social sciences. The standard view is that the world as such and individuals' experience of it inhabit separate realms—a physical world and a mental realm, respectively—and that what individuals know immediately is their own experience of the world rather than the world itself. One possible conclusion from this view, and indeed what this view has devolved into over recent decades, is the claim that *all* that can be known is one's own mental experience of the world. Individuals are left adrift in their own subjective realms, which exist apart from a common world. Such a viewpoint does not seem compatible to us with an interest in environmental sustainability and activism because it puts the 'real' environment *always* out of reach. Nor is it consistent with the basic assumption driving the United Nations Earth Summit, the City Summit and the concept of sustainability itself: that the environment is real and exists independently of anyone's experience of it, with real qualities and real limits that shape human lives and that human beings can discover. The realist alternative we embrace is built on the work of the ecological psychologist Gibson

(1966, 1979). Along these same lines, we demonstrate the relevance of the work of Roger Barker (1968) and his colleagues to conceptualizing how formal programs for participation can most effectively foster competence in everyday settings. In short, this article argues for the value of ideas in *ecological psychology* for the assessment of participation.

### Attempting to define participation at its best

There have been several schemes to define best practices in participation. The 'ladder of children's participation' formulated by the geographer Hart (1992, 1997; adapted from Arnstein, 1969) reflects the different meanings of participation and sustainability discussed above. At the bottom are three rungs which authorities often present as participation, but which Hart considers nonparticipation: manipulation, decoration (such as inviting children to sing and dance at political events), and tokenism. These activities mobilize children to legitimate an established system. True participation, according to Hart, begins with the fourth rung of the ladder, where children are assigned roles in their community, but they are clearly informed about goals and decision-making processes, and free to volunteer for a project after they understand it. This form of compliance fits the idea of technological sustainability. Higher rungs of the ladder carry the potential for creative transformation from the grassroots up, which is essential to ecological sustainability. Here, at successive levels, children are consulted as well as informed, share decisions in projects that adults have initiated, and—at the top rung—initiate and direct projects of their own in which they may invite adults to share decision-making. Depending on a project's context, any one of these higher rungs of the ladder may be most effective in achieving goals. Many of the characteristics Hart associates with authentic participation are echoed by Watson (1997) in his description of 'community youth development,' which encompasses community development projects that involve as well as benefit youth.

The urban planner Iacofano (1990) has noted that citizen involvement in environmental decision-making varies along two axes: the degree of interactivity, which includes what people learn about their environment and political structures, and the degree of actual influence that they have over decisions. Optimally, citizens learn a great deal at the same time as they have power to influence decisions and outcomes, Iacofano notes, however, that many projects rate high on the axis of interactivity and

learning, but fail to influence entrenched structures of decision-making—at least in the short term.

These typologies begin to define what participation at its best looks like. The first approach, by Hart, focuses on the participatory process itself. The second, by Iacofano, focuses on outcomes both in terms of concrete achievements and in terms of personal growth and group learning. At the same time, other factors combine to determine the form of participation that is most appropriate for a project's goals and resources as well as members' capacities. For example, when goals involve change within highly politicized domains, such as the urban environment, children's participation requires partnerships with adults and an extensive network of adult support (Chawla, 2001a). Projects entirely initiated and carried out by children are only likely to flourish in areas that don't interfere with adult interests.

With regard to outcomes, many claims are made regarding benefits to children in terms of personal development, in addition to any material gains they may receive such as food from a community garden or a new youth center. The participation clauses in the Convention on the Rights of the Child are rooted in the principle of 'the dignity and worth of the human person' that is affirmed by the Universal Declaration of Human Rights (United Nations, 1948). Correspondingly, it is often claimed that participation increases a child's self-esteem. Other frequent claims are that participation builds a sense of personal and collective efficacy, greater sensitivity to the perspectives and needs of others, and greater hope in the form of personal expectations for the future. It is said to prepare young people for democratic decision-making and active citizenship, to teach useful skills, and to increase environmental knowledge and awareness (Adams & Ingham, 1998; Checkoway *et al.*, 1995; Daiute *et al.*, 1995; Flekkoy & Kaufman 1997; Hart, 1997; Holden & Clough, 1998; Stapp *et al.*, 1996; Sutton, 1985; de Winter, 1997). Others assert that participation fosters a stronger community identity and place attachment (Adams & Ingham, 1998; Spencer *et al.*, 2000). All of these claims imply that children have opportunities to learn and practice new attitudes, skills and knowledge during the process of participation. Up to this time, however, very little has been done to assess the validity of these claims: whether, and how, these gains are in fact achieved. (For some initial efforts to document personal outcomes, see Griesel *et al.*, in press; Clacherty & Kistner, 2001; McIvor, 1999; Sabo, 2001; Sutton, 1985). In the area of outcomes as

well as processes, many unanswered questions remain.

### The centrality of competence

A symposium on 'Children's Participation in Community Settings' convened at the University of Oslo by Childwatch International and the MOST Programme of UNESCO in June 2000 brought together developmental psychologists, urban planners, architects, and representatives of children's organizations. One of the products of the symposium was agreement on criteria that describe features of effective projects for children's participation, regardless of the type of community setting.<sup>3</sup> (See Table 1.)

These criteria for effective projects begin to address the question regarding common features of

meaningful forms of participation. They are organized roughly according to different 'moments' in the life of a project, which include: conditions of the project's establishment; conditions by which members are selected or choose to become involved; conditions which make children feel valued and accepted; conditions that foster competence; and conditions for reflection and a shared understanding of the process. Although these project elements have been arranged sequentially in the table, in practice, participatory planning with children is iterative (Driskell, 2002), so that they can be expected to overlap and recur as a project unfolds. This article will focus on the criteria listed under 'Conditions for Competence' in Table 1, further elaborating them in the context of theories of ecological psychology. In doing so, the interdependent nature of these different project facets should become evident.

TABLE 1  
*Characteristics of effective projects for children's participation*

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#### *Conditions of Convergence\**

- Whenever possible, the project builds on existing community organizations and structures that support children's participation.
- As much as possible, project activities make children's participation appear to be a natural part of the setting.
- The project is based on children's own issues and interests.

#### *Conditions of Entry*

- Participants are fairly selected.
- Children and their families give informed consent.
- Children can freely choose to participate or decline.
- The project is accessible in scheduling and location.

#### *Conditions of Social Support*

- Children are respected as human beings with essential worth and dignity.
- There is mutual respect among participants.
- Children support and encourage each other.

#### *Conditions for Competence*

- Children have real responsibility and influence.
- Children understand and have a part in defining the goals of the activity.
- Children play a role in decision-making and accomplishing goals, with access to the information they need to make informed decisions.
- Children are helped to construct and express their views.
- There is a fair sharing of opportunities to contribute and be heard.
- The project creates occasions for the graduated development of competence.
- The project sets up processes to support children's engagement in issues they initiate themselves.
- The project results in tangible outcomes.

#### *Conditions for Reflection*

- There is transparency at all stages of decision-making.
  - Children understand the reasons for outcomes.
  - There are opportunities for critical reflection.
  - There are opportunities for evaluation at both group and individual levels.
  - Participants deliberately negotiate differences in power.
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\*"Convergence" is used here in the sense of the coming together of people, ideas and resources to establish new programs or settings (Wicker, 1987).

This table is adapted from a summary of a symposium on "Children's Participation in Community Settings" that was sponsored by Childwatch International and the MOST Programme of UNESCO at the University of Oslo in June 2000 (Chawla, 2001b).

In addition to conditions for effective projects, another topic of discussion at the Oslo symposium was the necessity for sensitivity to culture and context. This issue has also been explored by Boyden (1990) and Boyden and Ennew (1997), and in a collection titled *Stepping Forward: Children and Young People's Participation in the Development Process* (Johnson *et al.*, 1998). Certainly, children are socialized from infancy to see the world through the lenses of their culture, just as adults are socialized in the ways that they perceive and interact with children; and these differences affect the forms of participation and its goals that are considered acceptable in different cultures. Taken in its extreme form, however, this *social constructivist* view would maintain that there are no universals in child development: with the implication that there are no criteria for healthy development apart from distinct and typically incommensurate cultural value systems (James & Prout, 1990). As Stephens (1995) has observed, one consequence of this position is that the image of the autonomous, individuated child promoted by the Convention on the Rights of the Child, as well as the traditions of developmental psychology that underlie it, can be viewed as a form of Western hegemony that cannot be assumed to serve the interests of children across the full range of cultural settings. In this case, cross-cultural evaluation research is assumed, in principle, to be invalid. While there are many reasons for the current lack of coordinated research on how different forms of participation affect the children involved, the relativism inherent in social constructivism is one obstacle to its design and implementation.<sup>4</sup>

An alternative position—and one that we favor—accepts that there are certain basic needs for healthy child development common to all cultures, which evaluations of children's participation can usefully address, while at the same time recognizing that evaluation needs to include specific community-based goals. The need to balance universal goals for human development with a recognition of their local forms of expression has been argued by Nussbaum (1993, 2000). She demonstrates that the dichotomy posed by social constructivism between universal principles of human development and cultural relativism, which typically results in an emphasis on cultural incommensurables, is an unnecessary forced choice. It is possible to specify essential qualities of a human life that functions according to its full capabilities, while at the same time acknowledging the wide range of ways that these qualities are manifested within different social-cultural contexts.

In response to her own questions—what does it mean to function 'in a truly human way' that allows an individual 'to develop and exercise one's human powers'—Nussbaum (2000, pp. 230–231) proposes that we embrace the core idea of 'a human being as a dignified free being who shapes his/her own life.' The same idea lies at the heart of children's right to participation, as well as close to the heart of the concept of competence. Competence is a quality that has emerged from the psychology research literature as being significant for adaptive, adept and emotionally satisfying human functioning (Sternberg & Kolligan, 1990). It refers to the capacity to exercise control over valued spheres of life and in so doing achieve desired outcomes. In singling out this aspect of psychological functioning, we are claiming that it is possible to identify some essential human qualities that transcend the diversity of developmental values expressed by global cultures, and moreover, to specify some optimal conditions for children's development despite this diversity. To work toward the goal of providing for these experiences, we seek to define criteria for evaluating when these conditions are present, particularly with respect to children's capacity to understand and shape their everyday environment.

Our intention is to define general conditions for competence that can be applied to foster the many specific competencies of environmental change: whether these involve, for example, painting a mural, planting a garden, or convincing a group of the value of one's ideas for the community. We also want to stress that our focus is competence, and not merely a sense of competence, because the basic theoretical position that we will develop—that human beings coexist in a shared, common world—implies that there are specifiable standards for competence in environmental change apart from people's own assessment of levels of self-confidence. The competence of our actions relative to the environment is ultimately judged by whether they contribute to the preservation of the biosphere on which human survival depends, as well as the survival of innumerable and uncounted other species. In infancy, learning about the environment may be a relatively simple matter of learning about the functional properties of one's immediate surroundings, whereas by adolescence, it requires an emerging understanding of local ecosystems, as well as political systems.

To explain more fully what we mean by the term competence, it is essential to situate our analysis in a particular conceptualization of human functioning. After doing this, we will consider the kinds of

environmental circumstances that best promote its expression.

### Activities and competence

The conceptualization of human functioning we adopt takes as most fundamental the reciprocal, dynamic, ongoing relationship between an individual and the environment along the lines envisioned by Gibson (1966, 1979) in his ecological approach. From this perspective, the characteristics of the environment and the individual need to be understood in a *relational* manner—which will be explained more fully below. This view stands in contrast to positions that claim either the environment or individual can be adequately understood from a psychological standpoint when they are examined independently from each other, as distinct physical or subjective domains. From an ecological perspective, the environment is to be described in psychologically meaningful ways, and the individual is viewed as a sentient agent who purposively engages with his or her surroundings. In this respect, individual functioning at any moment is conceptualized as being situated in a particular environmental context, which also includes the individual's prior history of situated engagements.<sup>5</sup>

Within this relational framework, individual's activities can be differentiated broadly as being either performatory or exploratory (Gibson, 1966; Reed, 1988). *Performatory activities* are those actions directed toward some object or other individual within some setting for an intended purpose. In most cases, the specific purpose of these actions can be identified by the actor, as well as by an observer of these actions. *Exploratory activities* are actions directed toward discovering new properties in the environment. These actions too are purposive or intentional, but the end that will be discovered through the action cannot always be specified in advance. For example, a child may manipulate in an exploratory fashion an unfamiliar object and in the process discover some of its relational properties as a tool (e.g., it can be grasped, it can be wielded).

It is vital to stress that from the perspective we are adopting, both performatory and exploratory actions need to be viewed as occurring in relation to a *rich, structured environment* that surrounds the individual. Thus, in the case of performatory activities, the individual is making use of already known properties of environmental features that are available; and in the case of exploratory actions, the indi-

vidual is seeking to uncover new functional properties that may be latent in the surroundings. In making these claims, we are asserting that humans live in—and through perceiving processes are directly in touch with—a common world, even though locally the environment might be variously structured. Conversely, we are rejecting the widely held view (e.g., in social constructivism) that the world each individual confronts is unstructured, and that through cognitive processes each individual imposes a mental structure on the surround (i.e., a mental representation). Such a view proposes as many idiosyncratic and independent mental constructions of the world as there are cognizing individuals. (For an examination of these contrasting claims, see Heft, 1998, 2001.)

However, individuals can and do impose structure on an already structured world in a literal way. In addition to performatory and exploratory activities, they also engage in *productive activities* with respect to this already structured world, and through such actions, aspects of the world are transformed, with new environmental structures having particular functional properties being created. Indeed, all forms of environmental design and programming are productive activities in this sense. These productive actions have elements of both performatory and exploratory action. They are performatory in that there is typically some particular intended end guiding the activity; and they are exploratory in that the specific form of the action is created in the process of its being carried out. For example, children may have the intention of constructing a playground, but what materials they select and what design decisions they make will be determined in the course of the action process.

To say that actions can transform existing structures and produce new constructions,<sup>6</sup> however, is not to say that the resulting constructions are necessarily positive in their broader effects on the environment. Nor is it say that all of its effects are necessarily intended. This is where an understanding of what constitutes a well-functioning natural ecology, and thus an awareness of limits to human interference, becomes necessary. It is also where efforts like those of Nussbaum (1993, 2000) to specify the essential capabilities that constitute human functioning at its fullest become necessary, as well as how these capabilities may be filled in by the particulars of local contexts.

Over time, through their individual and collective actions, people sustain as well as alter their surroundings. Significantly, the structures that are sustained or altered form the context for subsequent

action, and so on in an iterative manner (Giddens, 1984). Thus, environment-action processes necessarily have a socio-historical character, with on-going practices producing outcomes that then function as the background for subsequent activities. A conceptualization of this nature underlies many recent influential accounts of development in cultural psychology that build on the work of Vygotsky and others (e.g., Cole, 1996; Rogoff, 1990), and we are sympathetic to it.

Reciprocally, what is the impact on individuals of their prior history of performatory, exploratory, and productive activities? The answer to this question crucially depends on some qualities of the environments with which a person has previously engaged. If these environmental features were responsive to the person's actions—that is, if they offered rich and varied information about the individual's efforts of engagement—then the person will be disposed to engage with those features again. The psychological outcome of these recurring experiences for the individual can be called competence.

### Competence and development

Ground-breaking research in infant and child development over the past several decades has produced a dramatic shift in how human functioning is conceptualized. The long-held view that humans are merely passive receivers of environmental stimulation has been overthrown, and instead a substantial amount of research has shown that from an early age, humans actively engage their surroundings in purposive ways (Gibson & Pick, 2000). Even newborns, who have little peripheral motor control, selectively engage their environment through the movements that they are able to control. Specifically, infants have reasonably good control over their eye movements, and through control of gaze, infants direct their attention selectively to particular environmental features. When the target of their gaze is another human being, which it initially is, directed eye movements play an crucial role in sustaining a primitive 'dialogue' of reciprocal actions that serves as the fundamental basis for all subsequent social exchange (Fogel, 1993). Thus, from the outset of life, individuals are inclined to engage their world in a directed manner to the degree that their skills in motor control permit.

Moreover, much empirical evidence indicates that what most influences *continuing* engagement with the environment is immediate and continuous information that a particular self-produced action results

in a discernible event. For example, when the rotation of a mobile is made contingent on an infant's (3.5 months) leg kicks (by tying the leg to the mobile via a cord), a high rate of kicking ensues (Rovee-Collier, 1986). Under these circumstances, the infant has learned about the relationship of her actions to an event in the world. In contrast, when movement of the mobile is controlled by the experimenter and is not contingent on the infant's actions, the rate of kicking quickly drops off. Thus, in the process of learning about an interesting event in the world, young infants reciprocally learn about the extent of their own capabilities. These and similar effects have been repeatedly demonstrated during the first year of life, even in infants as young as two to four weeks old (Van der Meer *et al.*, 1996). Research of this nature, as well as other work (Goldfield *et al.*, 1993; Thelen & Smith, 1994) clearly shows that in this reciprocal manner, infants sharpen and fine-tune their actions in relation to particular environmental features. With attention to similar research, Fuglesang and Chandler (1997) argue that responsive early childhood programs and parent training to increase interactive experiences of this kind are important precursors to children's readiness for more formal types of participation.

This way of thinking about goal-directed actions and qualities of the environment can also be found in the research literature concerned with adolescent and adult experiences. Although stated in somewhat different terms, evidence demonstrating that efficacious action promotes subsequent efforts of purposive, goal-directed action is replete in the literatures on self-efficacy (Bandura, 1997, 2001), learned optimism (Seligman & Csikszentmihalyi, 2000), and life satisfaction (Ryan & Deci, 2001).

To offer a concrete example that applies to older children, in the Growing Up in Cities program in Buenos Aires (Cosco & Moore, 2001), a group of children decided to mount a photographic exhibit of local community resources for children, and were then provided with the necessary materials for carrying out this project. Beginning with deciding which scenes to photograph, and then moving to shooting the scenes, to designing and hanging an exhibit that animated discussions about these resources, the children developed particular technical and social skills, even as they learned about their immediate environment and explored ways to represent what they had learned. The project provided them with opportunities for the development of competence in these domains; moreover, in the process, they became sensitized to, and sensitized others to, some psychologically significant features of their

community. Their developing sense of competence functioned as a critical component in subsequent efforts toward constructive community change.

We submit, then, that one essential quality of a fully functioning individual—a quality that transcends the range of expression of personhood found across different cultures—is the propensity to engage with aspects of one's environment in a selective, self-directed, and purposive manner. Just as the biological well-being of the individual rests on adequate functioning of various organ systems, the psychological well-being of the individual rests, to some extent, on efficacious functioning in domains of reciprocal individual-environment processes. And just as adequate biological functioning depends to a great extent on supportive environmental conditions (e.g., adequate nutrition, absence of toxins), efficacious psychological functioning depends to a great extent on appropriately supportive environmental settings. The hallmark of such settings would be information-rich conditions through which an individual can perceive the immediate effects of his or her purposive actions, and over time extend opportunities to refine those actions through continuous engagement. In the domain of environmental change, these settings can range from those involving mostly perception-action processes (such as pressing seeds into the earth), to social settings (planning and digging the garden together with friends) and political settings (petitioning the local government to secure a children's garden). While repeated experiences across a wide range of features may contribute to a general disposition to engage with one's surroundings, evidence suggests (Bandura, 1997) that individuals are most likely to develop competence and continue to engage with their environment in specific domains where they have experienced efficacious actions in the past.

In order to move closer to our goal of suggesting an approach to assessing community settings and participatory programs with respect to how adequately they facilitate children's competence, we need to offer a more detailed account of the environment from this perspective.

### Affordances and behavior settings

Efforts to describe the environment in ways that capture its functional properties are relatively uncommon in psychology. The environment is typically described either in terms of categories of object types or, with greater precision, in physical terms. In either case such an account has little immediate,

psychological bearing on individual's opportunities for action.

To employ an example used in an earlier paper (Heft, 1988), let us take the case where in the immediate field of view there are a number of trees. We could say there are present several environmental features of a common type, and we could specify these features in terms of reflected wavelengths of light, in terms of their width and height in meters, their canopy shape, and so on. These kinds of descriptions consider environmental features independently of an individual, and as such they say little about their functional properties. That this is the case can be seen when we describe these features in terms of the functional possibilities they extend to an individual. In the present example, from the functional point of view of children's play, trees vary widely in the possibilities they afford. Some trees afford hiding places, others function as climbing structures, others as repositories for fruit to be picked and hurled, and so on. This sort of functional description leads us to divide up the environment in a way that differs from the former object-centered (nonrelational) classifications. To illustrate, from a functional point of view, a tree that affords climbing for a child has more in common with other kinds of features that also afford climbing (e.g., some fences) for this same child than it does with other trees *per se*. In this case, different types of features are experienced as having similar functional properties when considered relationally in the context of goal-directed action. To describe a setting in terms of the functional possibilities that its features extend to a particular individual is to describe the setting's *affordances* (Gibson, 1979).

In order to appreciate the unique status of affordances, and to avoid assimilating them to the familiar (but problematic) world-individual dichotomy, it is crucial to bear in mind their relational character. A tree that affords climbing must, for example, have branches that are not too big to grab onto and that are not too high up to reach for a particular child. Clearly, whether a branch is graspable and reachable depends on characteristics of the child's body, and *also* it depends on specifiable properties of the tree. In other words, the affordance of being climbable is not a subjective property mentally imposed on an environmental feature. Not all trees are climbable for a particular child if only he or she wills it so. Being climbable is a property of the tree taken with respect to an individual. In short, affordances are *real properties* of the environment, even while they are specified relationally. And it is the fact that affordances are real, specifiable features



of the environment that make them particularly valuable in the planning, design and evaluation of environments and programs. Importantly, it is this characteristic that gives affordances a decided theoretical utility over mental representations of the environment—the coin of the realm for much environmental psychology—which are, by definition, inaccessible to observation and design interventions. With the concept of affordances in hand, one can describe environments in terms of the functional possibilities that they extend to particular individuals, and contemplate the functional implications of particular design decisions (Heft, 1997).

To extend this example to a community scale, one could consider to what extent a community, by virtue of its design and use patterns, affords children opportunities to engage with trees. Parks and other natural areas may be present in the community, but they may be inaccessible to children because of the hazards afforded by busy streets or other threats to safety. In such cases, the environment does not afford a wide range of freedom of movement for children to encounter different species of trees, or develop a connection with a favorite tree. Thus, even though certain elements of the landscape may be present, they may not be accessible for use. To look at a community along these lines is to consider both its functional possibilities and constraints.

A second type of functionally significant environmental feature is a *behavior setting* (Barker, 1968; Schoggen, 1989). Behavior settings are ubiquitous in our everyday environment, providing the ecobehavioral contexts for most actions. They consist of, in Barker's terms, 'a standing pattern of behavior and milieu,' which is to say that they are dynamic, but stable patterns of action among a group of individuals and supported by some environmental features (milieu). For example, a specific occurrence of a soccer (football) game encompasses a requisite number of individuals coming together at a particular time and place, establishing a set of relationships among themselves through their actions (playing the game), with the support of particular objects and features (a ball, a flat field, two goals).

A distinctive characteristic of a behavior setting, in comparison to an affordance, is that it is an extra-individual environmental feature; it resides at a higher-level of organization than do affordances. Typically, behavior settings are not specific to an individual as are affordances because precisely who the individuals are in a behavior setting rarely matters. To return to the preceding example, to be told that there is a soccer game being played on the field

down the street tells us many things, such as the object of the game, its rules, and the equipment that is being used, but it does not indicate specifically who is playing. That is the sense in which behavior settings are extra-individual entities. What is critical are the *dynamic relationships* that are established among participants and milieu.

At the same time, behavior settings are similar to affordances in several respects. They are real entities in the environment, rather than mental constructions. They can be located geographically and temporally (e.g., the soccer game occurred at a specifiable time and place), and their features can be observed and recorded through narrative descriptions that can be understood without special research training. Thus, behavior settings are actual occurrences, and as such, like affordances, they extend possibilities and set constraints on the activities of individuals. Both affordances and behavior settings are relational features of the environment that possess perceivable, functionally significant properties. That is, they are *meaningful* features of the environment. Because affordances and behavior settings are properties of environment-person relationships, their meanings are both objectively specifiable *and* culturally variable (Heft, 1989, 2001).

### Ecological resources and competence

Let us now draw together the preceding discussions of competence and functionally significant environmental features. Environmental features that are responsive to an individual's actions, that offer rich and varied information about the character of an individual's efforts of engagement, and that extend opportunities to refine these actions through continued engagement, are most likely to facilitate the development of competence in the same sort of activity. Two types of environmental features that extend such opportunities for action, and concurrently, that promote the development of specific competencies at the level of the individual and the group, respectively, are affordances and behavior settings. Because affordances and behavior settings are observable features of people-environment relationships that can be recorded through narrative descriptions, they form especially useful components of participatory programs to evaluate, that can be explained and shared with organization staff, community leaders and children themselves. These claims need to be elaborated, and in doing so, we need to offer some guidelines about how

these concepts can be employed in the evaluation of children's participation in community settings.

### *Affordances as ecological resources*

Affordances are, by definition, functionally significant environmental features identified in relation to some action, and qualitative differences among affordances that are pertinent to the development of competence may be hypothesized. It seems that children take particular delight and continue to engage those affordances that give clear evidence of their efforts. Particularly when new skills are being established, salient self-produced information seems to be especially valued. Thus, from the standpoint of evaluation, affordances vary in terms of the richness of information they offer in response to a child's engagement.

To take examples from the realm of informal participation in the environment, opportunities to explore natural areas are particularly rich in these qualities. The visual, auditory, and tactile stimulation that an individual's activities in water can produce are some of the reasons for this element's universal appeal. Soft earth invites digging, molding, and drawing, as children's actions are readily evidenced to them when they manipulate this material. Branches that afford swinging or bouncing-on yield immediate information to a child about her actions.

A more complex example that shows how these ideas can be applied in the realm of formal participation can be taken from a project for tree planting in rural Haiti (McIvor, 1999). A major cause of soil erosion, rural poverty and loss of biodiversity in this country has been the destruction of its forests, but only about 10% of the seedlings in tree planting schemes typically survive. To confront this problem, environmental clubs were formed in which children were given trees to plant in their home gardens in a variety of species that the children themselves helped to select because they would quickly yield marketable fruit that could be sold to raise money for school fees. At the same time, the children were shown how to measure and observe their seedlings' growth, and they met monthly to discuss their trees' progress with two elected delegates who served as liaisons to agricultural technicians. In this way they saw regular results of their efforts until their trees began to produce. It can be added that a survey of the children's clubs later showed that 80 to 90% of the children's trees grew to maturity.

Thus, with an emphasis on the quality of feedback available to the child, one can begin to conceptualize

the community areas children utilize and the projects in which they participate in terms of their affordances; and further, those affordances that are present can be evaluated in terms of the relative richness of information they offer when engaged. Moreover, as noted earlier, apart from the specific affordance properties of objects, the accessibility of those affordances to children becomes an important consideration.

To apply affordances in yet a different vein, clearly the richest source of information about one's actions comes from interaction with other individuals (Gibson, 1979). Social affordances are certainly the first functionally meaningful features that are noticed in infancy, and they remain a life-long preoccupation for all of us. To varying degrees, we receive information about the efficacy of our actions through social sources. Applying this claim to the domain of evaluation, it would seem that children's community participation is more likely when opportunities exist for them to see the fruits of their efforts through others. For example, a city council that extends the opportunity for a responsive hearing when children present their concerns not only offers an occasion for children to develop competencies in presenting reasoned proposals in formal social settings, but encourages this form of political engagement.

The reality of many communities, however, is that children's rights and needs rank low on the political agenda, and successful political engagement with children is difficult to achieve. Therefore it is important to build many smaller 'mastery experiences' into project activities, which give children opportunities to achieve the goal that they set themselves in areas where project facilitators and community residents have more control. For example, it may not be possible to convert a vacant lot into a safe play space, whereas school administrators may be willing to arrange for the local schoolyard to stay open on afternoons and weekends. As Bandura (1997, p. 80) has observed, 'A resilient sense of efficacy requires experience in overcoming obstacles through perseverant action.' It is also the case that it is important to learn flexibility in working toward goals in the political realm.

In short, an assessment of the affordances available to children can provide researchers with one source of information about the opportunities a community provides for competence development across a wide range of domains. The particular competencies at issue in any particular case are setting- and task-specific. For instance, when one goal of formal participation is to be informed about the

quality of local environments, then the degree to which the environment affords opportunities to move about, explore, and learn about its features is a critical consideration. And when the goal is to develop skills to be an active participant in one's community, opportunities to participate in responsive social structures are important.

In these respects, *Growing Up in Cities*, a program of participatory action research that has the ultimate goal of bringing children's voices into urban decision-making, begins with observations of where children are present and what they are doing in community spaces beyond the home, as well as engaging children in documenting how they use and value their environment (Chawla, 2001a; Lynch, 1977). *Listening to Smaller Voices* (Johnson, et al., 1995), a report on a project for participatory action research with working children in Asia and Africa, used a similar approach to document children's use of rural environments. In programs like these, the concept of affordances can sharpen observations of children in communities in order to identify exactly what actions different features of the environment facilitate, depending on children's capacities. In the process, it is possible to observe how these opportunities for action are culturally shaped, who is doing what and where, and who is excluded.

Where children lack chances to engage with features of the environment that are critical to informed decision-making, these opportunities can be integrated into program planning. For example, before the children at the *Growing Up in Cities* site in Melbourne participated in the design of a youth space for a public park, they toured a variety of open spaces, with time to explore and play, in order

to increase their awareness of the range of environmental features corresponding actions that they could include in their design (Malone & Hasluck, 2001). Many steps can be taken to increase the opportunities for engagement and learning that local environments afford (Chawla & Salvadori, in press).

#### *Behavior settings as ecological resources*

Just as affordances can be differentiated with respect to the quality of information produced by engaging them, so too behavior settings that support group activities differ in terms of how much influence an *individual* can have in their operation. This distinction can be explicated by drawing on Barker's (1968) notion of the 'zone of penetration' that an individual inhabits in a setting. In each zone summarized in Table 2, individuals participate in the setting's function with a different degree of involvement and responsibility.

Among these levels, there is a functionally significant gap between the first three and the last three zones. Only individuals who inhabit zones 4, 5 and 6 have discernible, immediate power or influence in a setting. In other words, only individuals occupying these positions in the setting would consistently experience the immediate effect of their actions on the setting's operations. As argued above, an opportunity to experience these effects is an important condition for the development of competence in a range of domains.

Barker's concept of zones of penetration can be quite useful for the design and evaluation of participatory programs for children. To illustrate, one of the most popular ways to give children formal

TABLE 2.  
*Zones of Penetration in a Behavior Setting\**

1)	Onlooker – Takes no active role in the setting. Has no power. Example: a submissive child sidelined by more aggressive children who dominate a program activity
2)	Audience – Have a recognizable place, but very little power. Example: audience members when children dramatize a community issue
3)	Members – Have potential rather than immediate power. Example: classmates who are eligible to elect a representative to a school council
4)	Active functionary – Have power over a part of the setting. Example: cast member in a play; a member of a team which is monitoring pollution in a local river
5)	Joint Leaders – Have immediate authority over the entire setting, but this power is shared Example: the play's creators and directors; the children elected by their peers to represent them at a council meeting
6)	Single – Leader Has immediate and sole authority over the operations of the setting (not characteristic of a participatory program)

\*Adapted from Barker (1968).

opportunities for participation is to establish elected bodies such as school councils or model parliaments. Doing so, it is believed, teaches children about democratic processes and gives all of them in the voting population an opportunity to be involved. From the perspective of zones of penetration, however, only those elected to offices or otherwise actively involved in the operation of the setting by holding positions of responsibility (e.g., on committees) would have opportunities to exercise competence to a notable degree. Those who are primarily 'members' (zone 3) would have far less to gain developmentally, though these positions are not without some value. Bandura (1997) has presented evidence that vicarious experiences, when people observe someone like themselves accomplishing something they would like to do too, foster a sense of self-efficacy. However, he argues that the most effective preparation for a sense of efficacy is 'mastery experiences,' when people achieve a goal themselves. The opportunities for actively engaging with a responsive environment and for refining one's actions over time, which this article has been discussing, are examples of mastery experiences. In school councils and model parliaments, only those elected to active roles have opportunities for repeated and experientially rich experiences of this nature.

Barker and his colleagues extensively examined one factor that directly affects opportunities for responsible involvement in settings, and this is the variable of *staffing*.<sup>7</sup> Staffing refers to the number of participants in a setting relative to the number of positions that need to be filled for the setting to operate. Optimal staffing would occur in a setting where the number of participants are equal to the number of required positions. Departures from the optimal number have interesting effects. The presence of understaffed settings results in greater pressure on individuals to participate, forcing individuals into performing multiple tasks, and increasing the number of participants holding positions of responsibility, to name just a few consequences. Inversely, overstaffed settings will produce large numbers of individuals who may be present in the setting, but hold no positions of responsibility.

Evidence for these staffing effects come principally from studies of institutions such as schools and churches. To illustrate, Barker and Gump (1964) found that students in small high schools (which typically contained understaffed settings) participated in the zones of influence of behavior settings (4, 5, and 6) more than twice as often as did students in large schools. Moreover, only two per cent of the small school students occupied

no responsible position in any school setting, as compared to 29% of the large school students. In addition, small school students entered a considerably wider range (i.e. twice as many *types*) of behavior settings than did their counterparts. Although these studies of staffing do not directly address young people's competence, the data clearly have important implications in terms of opportunities to have experiences which contribute to competence.

Apart from these conceptual innovations, Barker and his colleagues have developed methods for describing community resources, and these tools can be of great value as researchers attempt to evaluate the quality of children's participation. Following his guidelines for conducting a *behavior setting survey* (Barker, 1968), the settings in a community or an institution can be enumerated with considerable precision. Important for our purposes, a behavior setting survey not only can reveal the range of setting types available, the frequency of their occurrence, and who its participants are, but it can also provide information concerning the extent to which children hold positions of responsibility in those settings. To illustrate this latter point, through a behavior setting survey Barker and Schoggen (1973) compared a small community in the United States and one of comparable population size in England. They found that the children in the U.S. town held positions of leadership at an earlier age (defined in terms of their penetration to zones 4, 5 and 6 in settings), and that adolescents in the U.S. town held leadership positions in a larger number of settings than did their counterparts. The primary factor that seemed to account for these differences was the number of settings relative to the population size (i.e., staffing).

Given the limited funding among children's organizations, municipal governments and donor agencies for the facilitation of children's participation, how can funds be spent to provide as many children as possible with opportunities to develop competence as joint leaders or 'active functionaries' in projects to improve their environments and benefit their communities? A survey of behavior settings in a community can indicate existing settings where children already play a part in defining goals and expressing their views; and then it may be possible to enhance these settings through additional resources, rather than creating a new program (one which would be probably more expensive and possibly more controversial). When a new program is needed, observation of existing settings where children already share decision-making would suggest

forms of participation that would be likely to find acceptance. In addition, the preceding discussion of staffing effects suggests that when demands for participation are high, it would be better to create many small settings in which children can play active and influential roles than to invest in a few large settings in which only a small number of children can be active.

Some examples of programs that actively involve substantial numbers of children were given at the beginning of this chapter. Another excellent example is Las Cumiches radio station supported by Save the Children Norway (Giertsen, 2001). In this case, the organization invested in adult facilitators who could help children raise funding for the station. The station, in turn, created a large number of ongoing roles for children to serve as reporters, researchers, informants, performers, editors and technicians to cover issues of interest and concern for children in their region. In Nepal, the spread of children's clubs, managed by children themselves, involves thousands of participants in some active degree (Rajbhandary *et al.*, 2000, 2001).

### Conclusion: theorizing a shared world

Participatory programs for children can be evaluated according to a number of criteria. The concrete, intended *material outcomes* of a program are one important measure. Is the plaza renovation that emerged as local children's priority actually completed? Is the open drain that had been flowing into a pond where children play diverted into a sewer line? Equally important is the *personal learning* that takes place, that is both an outcome and a component of the participatory process itself. Did the children learn how to map the plaza and combine a variety of community needs in a final design? Did they learn about water systems, waste treatment systems, and how to influence local politicians? More generally, did they learn to feel skilled in articulating their ideas and sharing them before a group? Did they learn to give others a fair chance to be heard and learn to consider perspectives different than their own?

This article has focused on concepts from ecological psychology that can sharpen observations of whether or not programs for participation give children opportunities to gain competence at the skills that a program seeks to emphasize. As Bandura (2001) has argued with respect to the related concept of self-efficacy, propensities for engaging

with the environment grow out of involvement in particular contexts that make specific demands on individuals. As a result, the approach to assessment we propose asks the following question: To what extent do children in a particular community or program have opportunities to experience potentially competence-promoting activities?

This focus on competence transcends setting differences, identifying a quality that is universally characteristic of human functioning and well worth promoting. However, it is unlikely that a single measure of competence could be designed that would apply to the variety of settings for children found in different parts of the world. It might be the case that settings or programs that share similar goals and values could be grouped into a taxonomy of types, and if so, it might be possible to design competence measures that would apply to the variety of settings within a given type. But we are not yet to the point where such a taxonomy is near to being available.

Meanwhile, the concepts and methods that we recommend here encourage close observation of how communities, institutions and individual settings function for children, down to the fine scale of the affordances of individual people and objects with which a child interacts. They do not preclude, however, the use of other evaluation measures. Barker (1968) was also interested in the degree of local autonomy that people have in decisions affecting their settings, and acknowledged that behavior settings are nested in larger systems. This conceptualization was further developed by Bronfenbrenner (1979), and it is important in understanding the larger ecology in which programs for children operate. Moreover, in addition to the observation of affordances and survey of behavior settings we have proposed, first-person reports provide another important dimension. Indeed, Barker and his colleagues also collected self-report data to assess how individuals experienced their participation in settings.

In applying behavior setting theory to participatory programs for children or adults, in some respects these ideas are being taken into new territory, although some of this ground has already been broken. J. Barker (1999) has tried to demonstrate the relevance of behavior setting theory for participatory grassroots politics. In this domain, Wicker's (1987) call for more careful study of the conditions that lead to the creation of new settings, the circumstances that lead to the demise of settings, as well as links between settings, will be important to take up.

Ultimately, the goal of programs to foster children's participation should be to create or strengthen settings that possess ongoing lives of their own, even as particular participants leave the setting and new individuals enter. In the best of circumstances, such settings would grow out of features of everyday community life, and they would afford children meaningful participation, allowing them to express their views in creative ways, explore issues of shared interest, and take actions that produce tangible effects. A community will be successfully implementing the participation articles of the Convention on the Rights of the Child when a behavior setting survey shows that children appear to be taking on these roles in many places and in many different ways.

Importantly, from a theoretical point of view, the components of a behavior setting include affordances, and the relational character of affordances emphasizes that the psychological life of individuals is tied to the realities of their bodies and the everyday environment. The perspective of ecological psychology begins with the recognition of human agency in continuous, reciprocal interaction with the everyday world (Gibson, 1966, 1979; Reed, 1996). While this perspective compels us to attend to the specifics of action in particular individual settings, at the same time—and in contrast to views that assume (even if only tacitly) that we each live in separate, socially constructed worlds—it also maintains that we co-exist in a common world. This vision is fully compatible with the recognition of our interdependence with each other and our interdependence with our place. It is also in harmony with the underlying principle of Agenda 21 from the Earth Summit, the Habitat Agenda and other documents which are motivating initiatives to engage children in learning about and managing the places where they live. At its best, participation should be an extended process that will involve children in coming to understand how their own localities are embedded in larger and larger natural systems—a process which constitutes a vital facet of children's coming to understand their shared humanity in one shared world.

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### Notes

<sup>1</sup>In United Nations documents, 'children' signifies all young people under the age of 18, whereas "youth" typically includes 15 through 25 year olds. This article will use the term 'children' in this sense that includes adolescents.

<sup>2</sup>The countries that have not ratified the Convention are the United States and Somalia. Until the year 2000, Somalia did not have an officially recognized government and therefore it was unable to take action on ratification.

<sup>3</sup>For a summary report on the symposium, see Chawla (2001b).

<sup>4</sup>Other barriers to research on children's participation in community development include: an assumption that the arena where children learn major life skills are school and the home rather than out and about in the community; a shortage of trained child researchers and adequate research facilities in many parts of the developing world; inadequate funding for this dimension of development projects; or often when evaluation is funded, an investment in participatory evaluation alone, in which case the outcomes measured are not likely to be comparable across settings.

<sup>5</sup>This conceptualization bears many similarities to that offered by Lewin (1943), except we more fully embrace a relational view of environment and individual, whereas Lewin argued for a distinction between the psychological and non-psychological domain. The subtleties of these differences go beyond the scope of this paper (see Heft, 2001).

<sup>6</sup>To repeat, our use of 'construction' differs from its standard use in psychology referring to a mental construal of an informationally ambiguous world. Our use is identical to the everyday meaning of creating new effects in a world of structure.

<sup>7</sup>In most of Barker's writings, the term 'manning' is employed: in his later writings more gender neutral terms such as 'staffing' are used.

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